



**NOAA
FISHERIES**

**NW Fisheries
Science
Center**

NWFSC Fisheries Observer Program Overview

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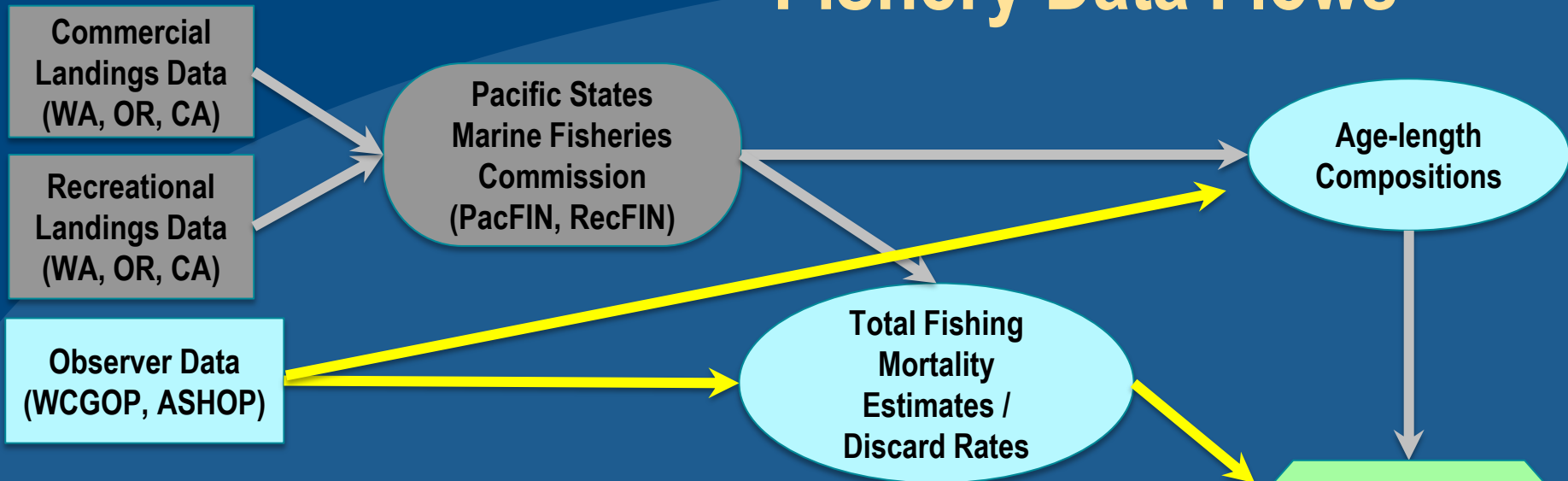
September 19th, 2013

Presentation Outline

- Overview of Programs and fisheries observed
- Vessel Selection and Coverage Rates
- Data Collection and QA/QC
- Data Products

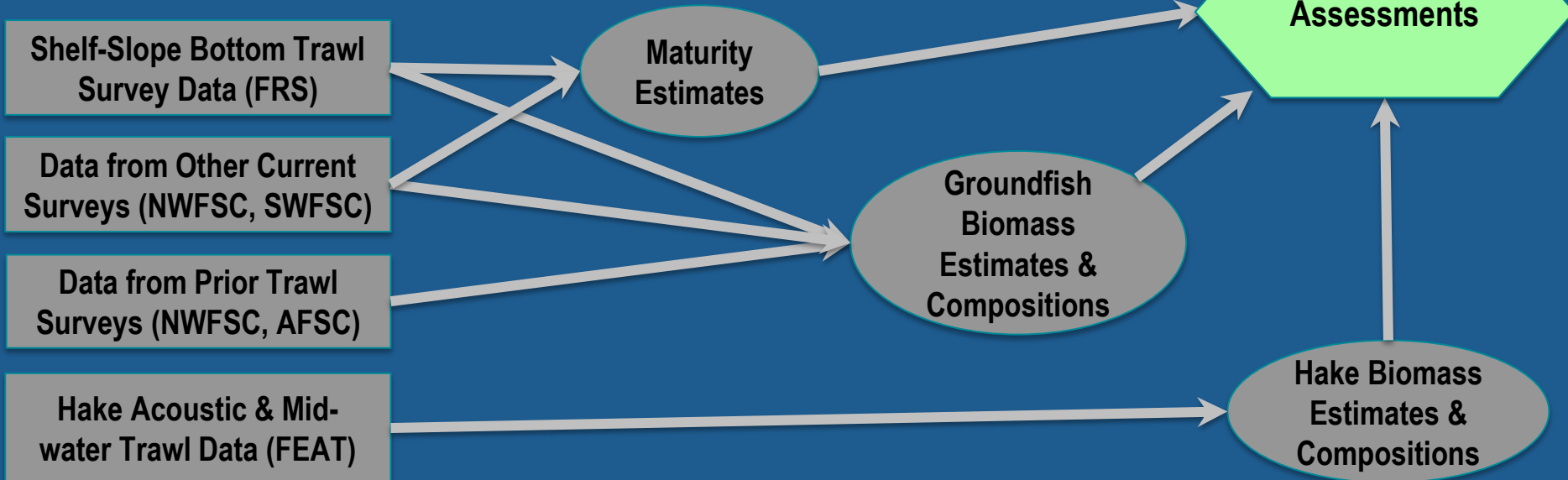


Fishery Dependent Data



Fishery Data Flows

Fishery Independent Data



GOALS

- Collect high quality, unbiased fisheries-dependent data
- Provide sound science on west coast fisheries bycatch
- Collect and report protected species interactions with west coast fleets



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Program Information

West Coast Groundfish Observer Program (WCGOP)

- Catch Share – Science and catch accounting
- Non-Catch Share – Science
- Implemented 2001 with a focus on discards
- Cooperative agreement w/ Pacific States Marine Fisheries Commission (PSMFC)
- 11 NOAA FTEs (3 vacant)
- 14 PSMFC employees

At-Sea Hake Observer Program (A-SHOP)

- Motherships - Science and catch accounting
- Catcher Processors - Science and catch accounting
- Implemented in 1977, focus on catch estimation, 2 observers per vessel began in mid-90s



Fisheries Observed

Individual Fishing Quota (IFQ)

Fisheries (aka Catch Shares)

- Shoreside Hake

- Shoreside non-Hake Groundfish

- At-sea Hake (3 sub-sectors)

Non-Nearshore Fixed Gear

- Limited entry (LE) sablefish

- Open Access (OA) fixed gear

Nearshore Fixed Gear

- CA and OR

Pink Shrimp Trawl

- CA, OR and WA

California Halibut Trawl

Gears

Bottom Trawl

Pelagic Trawl

Shrimp Trawl

Hook and Line

- Rod and reel

- Stick/pipe

- Longline

- Snap gear

Pots/Traps

Scottish Seine

Kayak



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WCGOP Vessel Selection

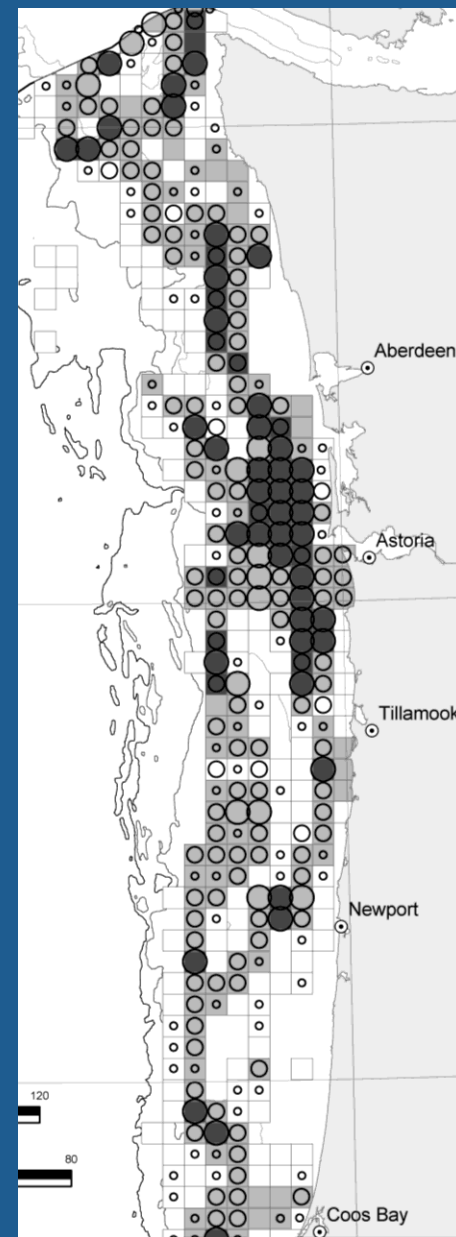
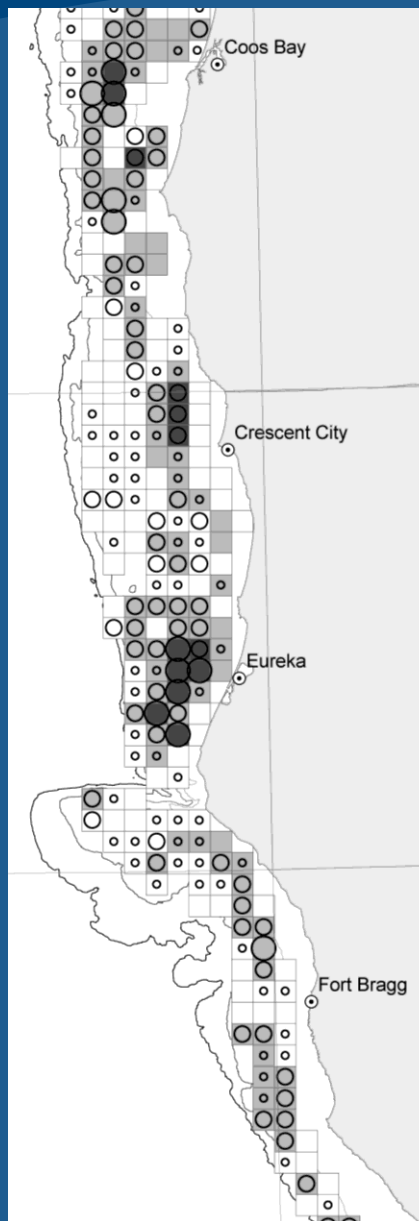
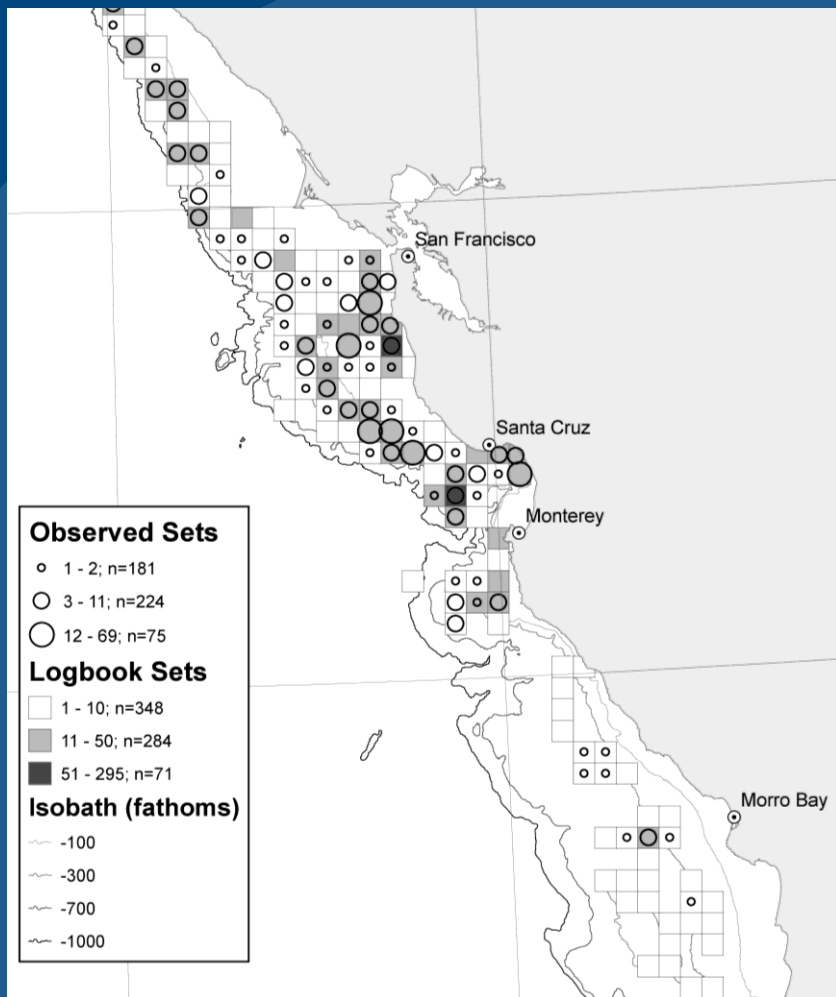
Vessel selections are made by:

- Collecting permit, license, and vessel lists obtained from the NOAA Northwest Region or relevant state agencies' databases.
- Permits/licences/vessels are aggregated by regional “Port Groups” based on previous years landings
- Design-based framework distributes observer coverage more evenly coast-wide than simple random sampling

WCGOP Vessel Selection

Selection period

- 2-month trip period
- LE Trawl fishery (now IFQ) mandatory 100% observer coverage (since 2011)
- Some fisheries are seasonal (LE Fixed Gear SABL, Pink Shrimp)
- Overlapping and stacking permits complicates selection



WCGOP Vessel Selection

Exceptions:

- Only vessels >17 feet
- Trips may be waived :
 - Safety
 - Weather
 - Observer availability
 - Vessel space constraints
- No waivers in the IFQ fishery



A-SHOP Coverage

Two observers are deployed on each vessel for every sea day

~100% of hauls are sampled for species composition

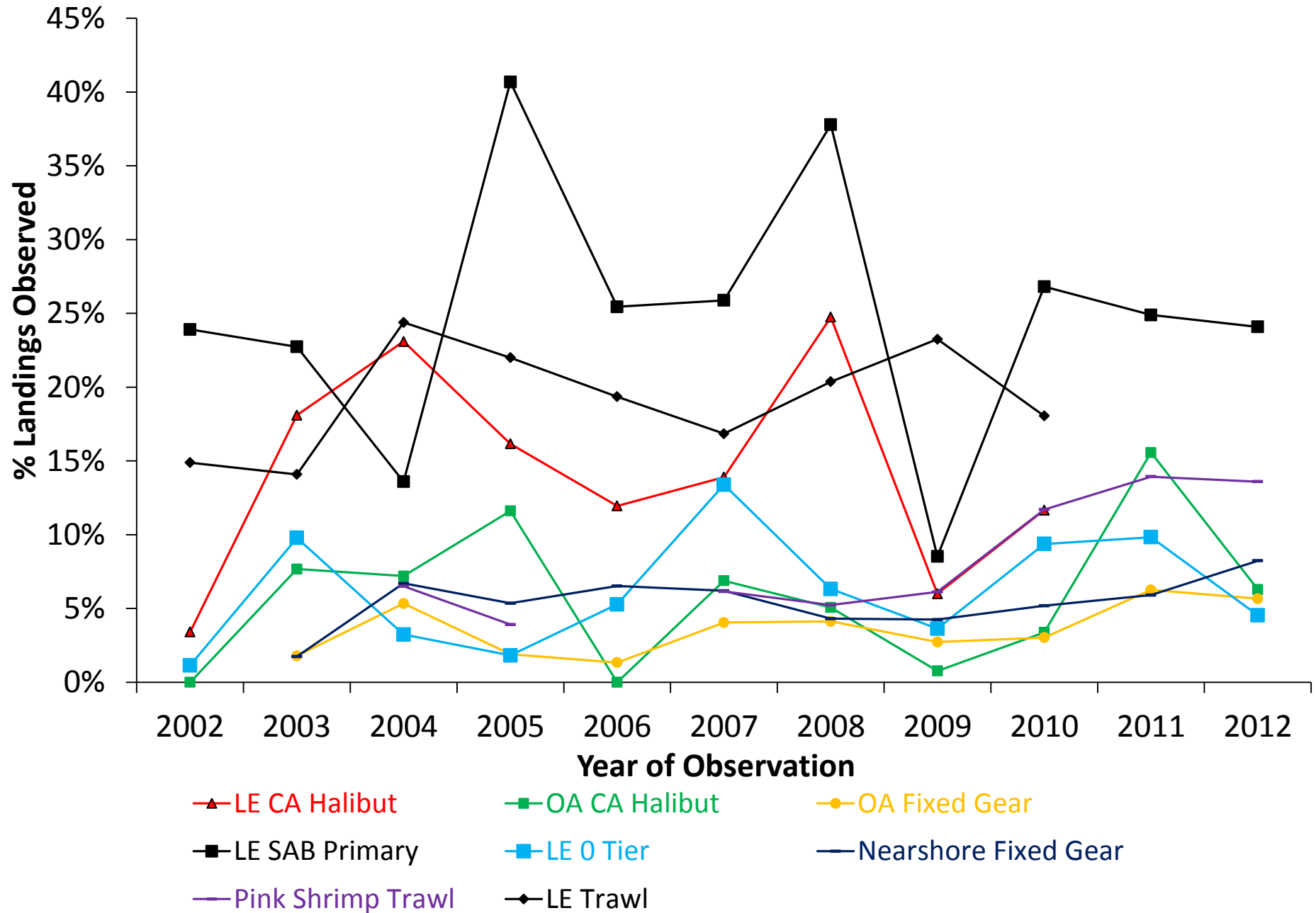


Coverage Rates




IFQ Shoreside Fishery Coverage Rates, 2011-2012. Coverage rates are computed as the proportion of total groundfish landings (excluding Pacific hake) from the sampled catch versus total catch (sampled + unsampled). Landed weights were adjusted to fish ticket landing receipts for each trip.



	Bottom Trawl Gears		Hook-and- Line		Pot		Shoreside Hake	
	2011	2012	2011	2012	2011	2012	2011	2012
% tows sampled	99.4%	99.4%	100%	100%	99.9%	99.95%	100%	100%
% groundfish landings sampled	99.4%	99.4%	100%	100%	100%	100%	100%	100%




Non-Catch Share Fisheries



Observer and Trip Activity for 2002 - 2012. The trip, observer and sea day totals are derived from the fisheries within the respective program. The number of sea days are calculated from the departure and return dates within a trip.

PROGRAM	Avg # of Trips per year	Max # of Trips	Min # of Trips
WCGOP Catch Shares*	 2356	2492	2220
A-SHOP Catch Shares**	41 	55	28
EFP	78	156	29
Limited Entry	 667	818	235
Open Access	491	717	204

PROGRAM	Avg # of Observers per year	Max # of Observers	Min # of Observers
WCGOP Catch Shares*	 92	97	86
A-SHOP Catch Shares	27	40	16
EFP	8	19	2
Limited Entry	 41	46	34
Open Access	35	43	16

PROGRAM	Avg # of Sea Days per year	Max # of Sea Days	Min # of Sea Days
WCGOP Catch Shares*	 7673	7900	7445
A-SHOP Catch Shares	1209 	1884	680
EFP	207	556	47
Limited Entry	1874	 2515	586
Open Access	801	1395	265

*WCGOP Catch Shares data from 2011-2012

**Trip data only available for 2008-2012

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Observers

Intensive 3 week observer training

- Observer candidates must meet minimum eligibility requirements such as education standards and required annual briefings
- Covers random sampling, techniques, intense safety training, fish ID, general vessel awareness, conflict resolution and gear use.
- Must pass with 80% or better score on fish and general exams.
- A-SHOP adds additional training for NPGOP certified observers



WCGOP Data Collection

Observer weight and sample methods

- Random unbiased sampling
- Multiple sampling methods and priority lists allow flexibility
- Focus on sampling discards and protected species interactions
- Minimum sample sizes, when practical

Example weight and sample methods

- Actual weights
- Spatial subsampling (sample a random subsection)
- Basket volume determination
- Tally with collection of subset for average weight

WCGOP Data Collection

Trip Level

- Fishing effort
- Total catch estimates
- Fishing locations
- Vessel and crew
- Gear configurations and excluder use

Haul/Set Level

- Retained and discarded catch estimates for all catch
- Observer weight methods
- Catch categories system used to estimate single species and species groups



WCGOP Data Collection

Catch Category Level

- Species composition sampling
- Weights and counts
- Reason for discarding
- Observer sampling methodology

Species Level

- Lengths, weights, sex and otoliths
- Pacific halibut viabilities
- Genetic samples for salmon and green sturgeon; whole specimens of eulachon (protected species)
- Marine mammal, seabird, sea turtle interactions.



A-SHOP Data Collection

Trip

- Dates, times, ports, crew size, time lost at sea

Haul

- Fishing effort data
- Location, date, time, depths, gear type and performance
- Total catch estimates
- Species composition samples
- Retained and discard estimates
- Biological data on target and bycatch species
- Chinook salmon genetics and coded wire tag sampling
- Protected species interactions and sightings





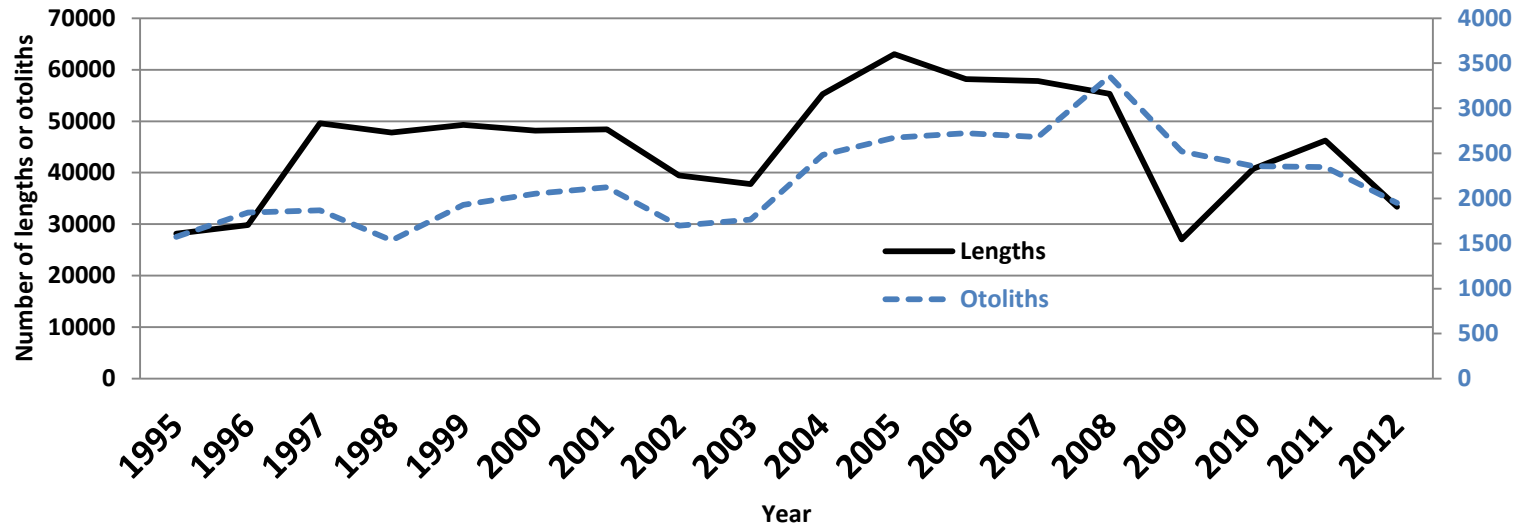
A-SHOP Biological Sampling Summary

Species	Length	Sex	Weight	Age structure	Genetics sample
Hake	x	x	x	x	
Bocaccio	x	x	x	x	
Canary	x	x	x	x	
Darkblotched	x	x	x	x	
POP	x	x	x	x	
Rougheye	x	x	x	x	
Widow	x	x	x	x	
Yelloweye	x	x	x	x	
Yellowtail	x	x	x	x	
Spiny dogfish	x	x	x	x	
Chinook salmon	x	x	x	x	x
Sturgeon	x	x	x	x	x

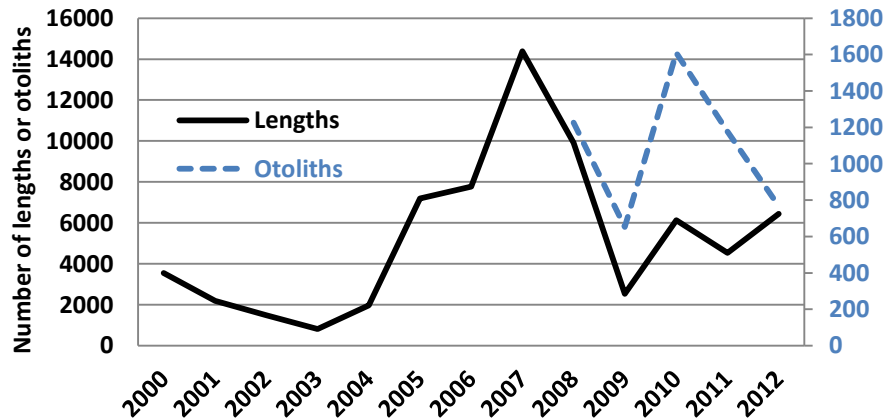


A-SHOP Biological Sampling Summary

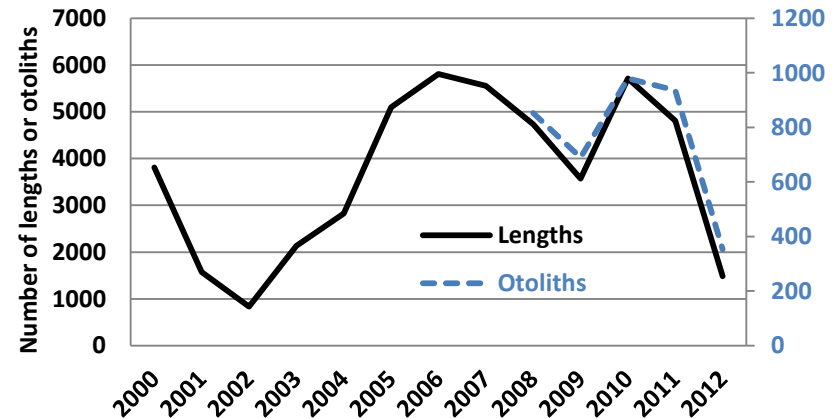
Hake



Widow

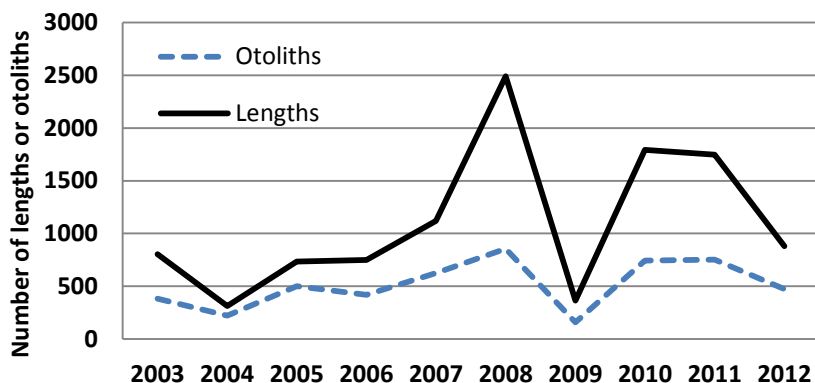


Yellowtail

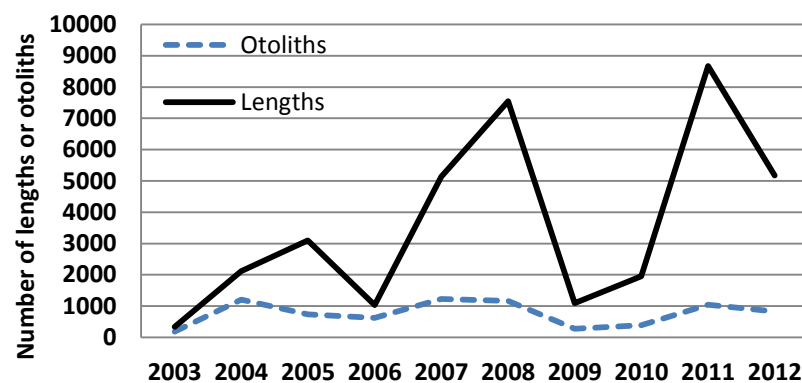


A-SHOP Biological Sampling Summary

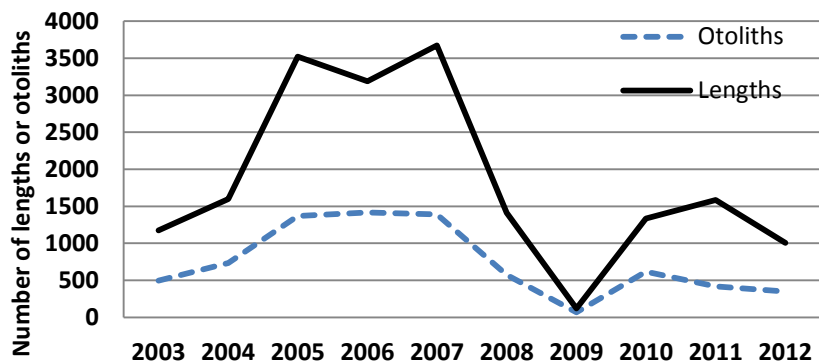
Pacific Ocean Perch



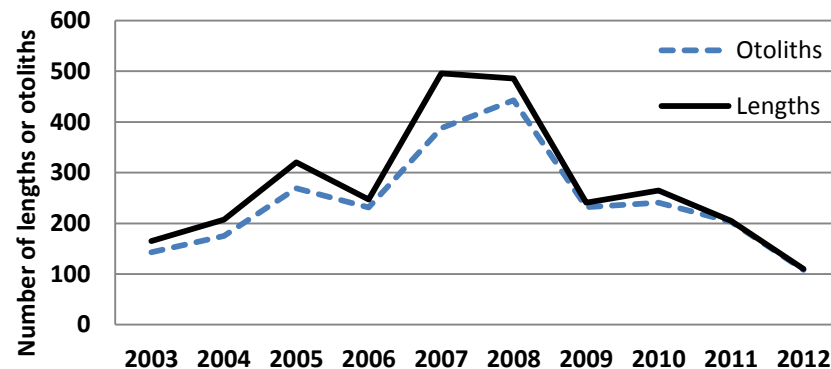
Rougheye



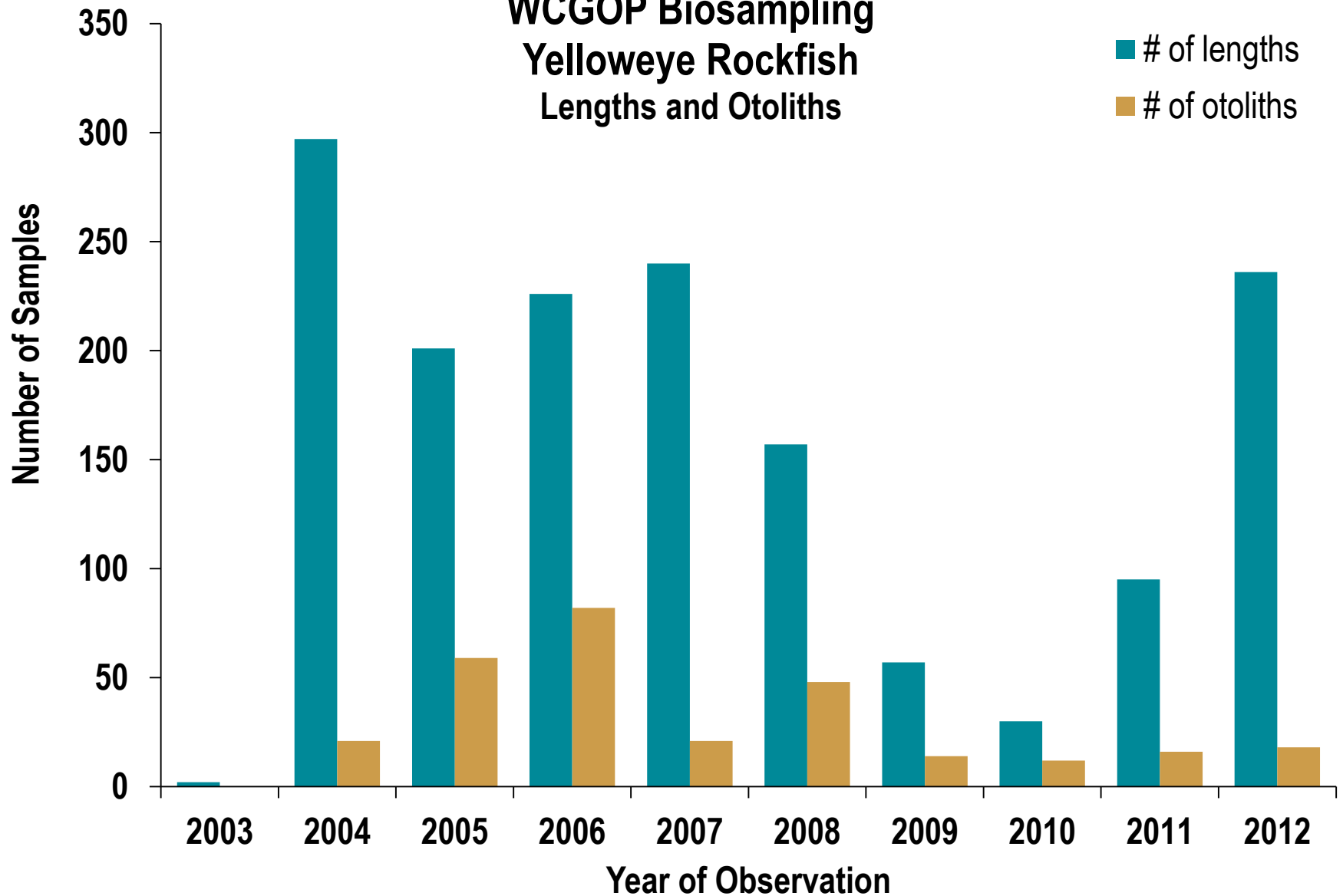
Darkblotched



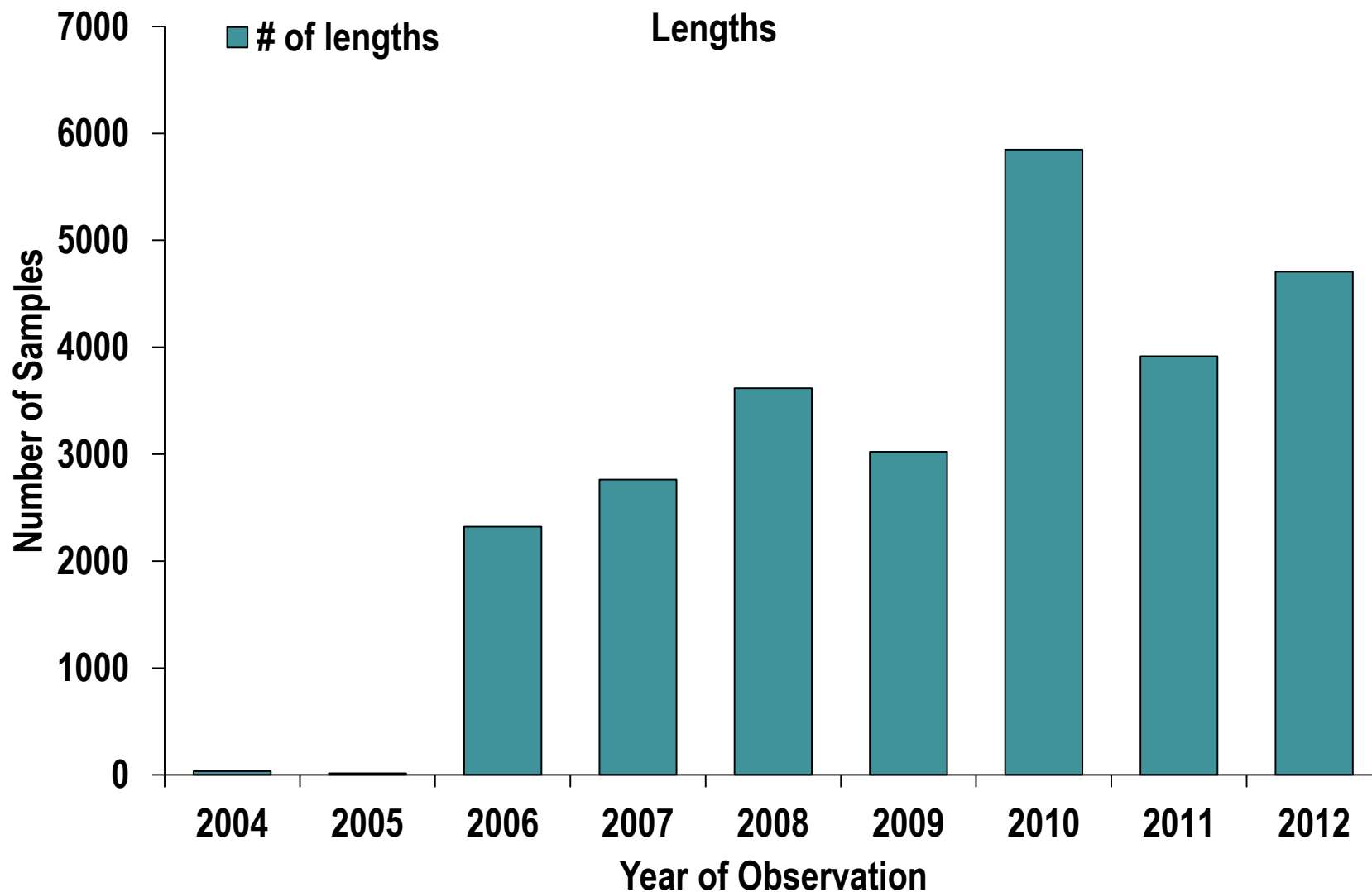
Canary



WCGOP Biosampling Yelloweye Rockfish Lengths and Otoliths



WCGOP Biosampling Sablefish Lengths



WCGOP IFQ QA/QC



A-SHOP Data QA/QC

- Data submitted daily
- In-season data checks
 - Error validations
 - In-season advisor

Deployment
(up to 90 days)

End of Deployment
/Pre-Debriefing

- Error Validations in NORPAC (Alaska region) database
- Debriefing Review

- Observer interview
- Data corrected
- 'Debriefed' status

Debriefing

Data Finalization

- Deployment evaluations sent to observers
- Deployment closed



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Data Processing

WCGOP

- Expand species composition by haul
- Translate WCGOP codes to PacFIN codes
- Query and process all PacFIN fish ticket data
- Merge Observer and Fish Ticket data – adjust retained catch weights
- Remove non-applicable data: mud, debris/garbage, kelp, rocks etc.



Stock Assessment Data Products

ASHOP and WCGOP

- Biological Data
 - Lengths
 - Ages
 - Average Weights
- Discard Ratios - WCGOP
- % Retained + Total Discard – ASHOP
- Total Mortality Estimates
- Discard estimates for fisheries that we observe



Stock Assessment Data Products

Groundfish Mortality Estimates

- Stratification
 - State, latitude, depth, season, fishery, management area
- Discard estimation
- Differs by sector
- General approach: Ratio estimators

$$\frac{\text{Discard (lbs)}}{\text{Fishing Effort Metric}} \times \text{Fishing Effort Metric} = \text{Estimated Discard}$$

<div></div>	<div></div>	<div></div>
<i>Observed Discard Ratio</i>	<i>Fleet Total</i>	<i>Fleet Discard</i>



Strengths

Only source of information for at-sea discard for west coast groundfish species

High (20-99%) coverage levels in the largest harvesting sectors

High retention of observers in non catch share sector

Many products are available online through NWFSC website.



Strengths

High data quality standards

Comprehensive training program

Frequent feedback and debriefings with observers

Committed staff with extensive observer experience

Internationally recognized safety training program



Challenges

DATA MANAGEMENT

Data Requests - Confidentiality

Low coverage in some fisheries

Reduced observer numbers (7 of 26 seasonal observers deployed in WCGOP 2013)

Safety of vessels with 100% coverage and aging vessels



Challenges

New compliance monitoring roles and reporting of near real-time data

Huge increase in data load and observers in the IFQ fisheries

Staffing: 3 vacant positions in an understaffed program

Large geographic area

No dedicated training facility – Train ~150 observers a year

Reliance on AFSC observer program for A-SHOP program



Moving Forward

DATA MANAGEMENT

- Need data systems to allow for more access and more functions
- Automated system for integrating fisheries dependent data sources

Development of an offline, onboard data entry system

Form collaborative teams for species bycatch reporting

Explore electronic monitoring



Moving Forward

Develop institutional mechanisms to balance priorities with available resources

Develop more non-confidential “off-the-shelf” data summaries

Promote observing as a professional career

Maximize efficiency and reduce uncertainty by exploring alternate sampling strategies and coverage levels



Questions?



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